DOCUMENT RESUME

ED 210 930 FL 012 710

AUTHOR Price-Williams, Douglass
TITLE A Cultural Approach to Metacognition.
PUB DATE Aug 81
NOTE 25p.; Paper presented at the Annual Meeting of the American Psychological Association (August 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Processes; *Cultural Context; Ethnography; Institutions; Interaction; Literacy; *Mental Retardation; *Metacognition; *Mnemonics; Social Behavior
IDENTIFIERS Brunswik (Egon)

ABSTRACT

Examples of metacognitive material from different cultures are presented. These include not only clear mnemonic strategies, but more complex cases in which the element of metalinguistics enters. The relevance of this ethnographic material to issues in the experimental psychology of metacognition is discussed. Illustrations of metacognition from contemporary mentally retarded persons in our own culture are presented using an ethnographic approach. The social relevance of metacognition is emphasized. Brunswik's conceptions of distal and proximal are utilized as a model of conceiving the notion of metacognition. There are two elements involved in the concept of metacognition --an external one and an internal one. The external one lies in the domain of social interaction and social institutions, in the entire socio-technical system. The resources and determining aspects are exosomatic or outside of the individual. What is internal to the individual is the directionality or vectoring component of the cognitive process itself. When the internal engages the external, the term "metacognition" is used. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Douglas Price-Williams
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A Cultural Approach to Metacognition*

Douglass Price-Williams

University of California, Los Angeles

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED210930

Defined roughly as knowledge about cognition, the concept of metacognition has in recent years been the subject of research and analysis, in the fields of both general and developmental psychology. The present article presents information about metacognition from ethnographical accounts across the world. This is presented partly to place the idea on a wider perspective and partly to complement the focus of experimentation with description of real-life activity.

The apposition of observation of everyday activities to tasks imposed in the experimental laboratory is not a new theme, but it is one that is constantly recurring in the history of experimental psychology. It dates back at least to Egon Brunswik's book Perception and the Representative Design of Psychological Experiments (1956) with its strong insistence on ecological validity of variables. In the present context of metacognition and over twenty years later, we find Rutterfield (1978:170) wistfully expressing that it would be reassuring to find out that the lack of executive functioning noted in children during laboratory procedures could also be observed in the outside world. We must recognize of course that experimental manipulations allow us to probe relations between variables that cannot otherwise be teased out of their multiplicative context in the real world. At the same time, task specificity in experimental procedures need to have some link with what is euphemestically called "the real world" to escape the imputations of esotericism and artificiality. The same argument has been used in the past with respect to intelligence testing and evaluations of verbal production among ethnic populations.

FL 012 710

*Invited Address to Division 33. American Psychological Association, August, 1981.

Investigating settings in the environment through basically observational procedures solely, is the province of the social sciences. The study of cognition has not escaped the attention of the social sciences. We find a cognitive anthropology (Tyler 1969) and a cognitive sociology (Cicourel 1974). Perhaps in the spirit of De Talleyrand's maxim that war is much too serious a thing to be left to military men, anthropologists and sociologists have felt that cognition is much too serious a subject to be left to psychologists. Examination of much of this work (e.g., Price-Williams 1980) reveals that what goes under the heading of cognition in these social sciences is a far cry from the traditional areas of psychological enquiry. The cognitive orientation in Anthropology and Sociology leans heavily on cultural and social interaction, language use, and particularly stresses the heavy social load that taxonomic systems carry. If, then, this is not cognition as we understand it, what is it? We might say that it constitutes the study of metacognition, though not necessarily in the more conscious sense introduced by Flavell (1977). It is 'meta' in the anatomical sense of meaning 'behind' or'posterior'. This is not a trivial semantic point, as 'meta' in this sense is similar to how Brunswik (1956) used the term 'distal', as opposed to 'proximal'. The sun is a distal stimulus, the rays of the sun impinging on the retina constitute the proximal stimulus. A proximal response is the actual movement of the muscles; a distal response "is the part of the executive aspect of an act that is measured by its effect in altering the environemnt beyond the boundaries of the organism" (English and English 1958:159). Brunswik seemed to be thinking more of the physical environment, but Vygotsky (1978) is clearly focussing on the socio-cultural environment when he uses the term "zone of proximal development" to refer to the distance between a child's independent developmental level of problem solving and the level of potential development determined through problem-solving with adults and peers, that is, through social interaction (Vygotsky 1978:86). Vygotsky does not contrast his use of the term 'proximal' with 'distal' but the sense of the definition is a distancing from social origins.

Brunswik thought of the distal/proximal distinction as an axis, with intermediate positions. Thus, reflected light was a nearer distal object than the original source. I think that this conception of an axis largely disposes of the concern of the executive as a homunculus (Neisser 1966:292-296), as we could conceive of metacognition as a reflective act that redirects the individual to the distal sources of cognition. Wertsch et. al.(1980),Cole and Newman (1981) see metacognition arising from the internalization of regulations, originally laid down through contact with others. But individuals differ in their ability to do this, and this is presumably where intelligence steps in. We would fully agree with Brown (1978:79) that "conscious executive control of the routines available to the system is the essence of intelligent activity", but would add that to be intelligent, is in part, to have awareness and manipulatory control of one's own culture, albeit a small part. This view of intelligence would have implications beyond the limits of this article. We should rather focus more closely on the way metacognitive activity has been actually practised in various communities, and see what can be learned from this.

Metacognition in non-literate cultures. Mnemonic strategies from history and from other cultures have been mentioned in the psychological literature, mainly by Brown (1978) and Meacham (1972). We can begin our discussion by mentioning others and include some examples that seem to go beyond simple mnemonics into metacognition generally. The Message Stick used by the Australian aborigines is perhaps a very obvious example of a mnemonic. It is well described in an account given by a member of the Alawa tribe of Australian Aborigines to a western writer (Waipuldanya with Lockwood 1970). A messenger is sent to a far-off place with a stick that is notched for different messages: one notch may mean, please tell my grandmother that I (the sender of the message) am well. A messenger may carry several sticks from several places, each of which is notched several times. Elenore Smith Bowen, in her autobiographical account of her field work with the Tiv of

Central Nigeria (1964:165), gives another example of the use of the stick for aiding the memory. Quarrels, to be settled by the clan-head, were enumerated by members of the various conflict groups present, by reference to tally sticks. One stick represented the mother's anger, another the affair of the goat, a third the quarrel between his father's brothers, yet another what the grandmother knows.

A more complex example which brings us into the uses of strategy is the divination knots of the Caroline Islands (Lessa 1959:188-204). The procedure is complicated, but in essence it can be simplified as follows. It is in four parts. In the first part, leaves from a palm tree are picked, either by a diviner or by a client, and tied into knots. They are then placed into certain positions on the fingers of the left hand. We may follow Lessa's account (Lessa 1959:194-5): "The knots are tied at random...When the first leaf strip has been knotted, it is placed between the thumb and forefinger, the second between the forefinger and the middle finger, the third between the middle finger and ring finger, and the fourth, lastly, between the ring finger and the little finger of the same hand. Now the knots are counted for the first time in this manner; when one reaches the number 4, one begins over again with 1." The second part consists of transferring the strips that are now numbered onto the right hand - we are not told from the account whether this is physically or imaginally done, but the orientation is that the left hand is placed palm down on the back of the right hand, so that the leaf strip that was knotted last and which had been in the position between the little finger and the ring finger of the left hand, is now placed in the position between the thumb and forefinger of the right hand. What we end up with on the right hand, going from thumb to little finger, are four numbers. As Lessa goes on, "Beginning with the thumb the final counting of knots is now made for the interpretation of the oracle. The first two numbers and the last two form two pairs. For example, if the number of the last knot of the leaf strip between the thumb and the forefinger is 3 and that of the next leaf strip, 4; that of the third 2, and

that of the fourth, 1, the two pairs of numbers are 3 and 4, 2 and 1."

While this procedure may seem complicated in the telling, the mnemonic strategy seems to be quite simply the position of the leaves between the fingers. There are only four numbers to remember and the transposition to the right hand is aided by the mental image, or actual procedure, of the left hand being placed on the right, so that the fingers of the two hands are aligned.

Now we come to the third part of the divination. The procedure is repeated eight times, as sixteen combinations of the numbers 1 through 4 need to be made. These sixteen combinations are given names, the names being those of the sixteen mythical boatmen - spirits - that occupy a leading role in a well-known myth. The names themselves are probably remembered by their position in the canoe. One spirit boatman sits in the outrigger position, two others are on the platform, and the remaining thirteen are seated along the body of the canoe. But the names are remembered along with their combination. Thus, on the island of Yap, the boatman called Lifer has the combination of 4 + 1; the boatman called Negine has the combination 2 + 2, and so on.

Coming now to the fourth and final part of the divination procedure, we note that there is no significance given to any one combination. The meaningful item is the sequence of two successive combinations. Thus 4 + 1, followed by 3 + 2, say, would be a meaningful event, and it is this pairing that determines the nature of the divination. The procedure is rather like the practice of paired comparisons in experimental psychology. There are in consequence many possible pairings, 256 in all. Now some of these are pretty universally thought of as favorable or unfavorable: 1 + 1, followed by 2 + 2, is usually thought of as a good omen; while 1 + 3, followed by 4 + 1 is thought of as bad. But there are complications often inserted by the diviner. For example, the same combinatory sequence that is given to an ordinary person and is thought of as bad, might be favorable when given to a chief. If the mythical boat is of the sailing type, different combinations are used than if the boat was a canoe. The same combination may be considered favorable

if the divinatory concern is for war, but unfavorable for other concerns. Undoubtedly the proliferation of further confounding variables maximizes the power and politicking ability of the diviner, who can thus call his own shots. But there are sometimes strategies of divination that can be discerned by an outsider. There is an earlier account, mentioned by Lessa, of Furness in 1910 on the island of Yap. At that time the sixteen mythical spirit boatmen were both men and women, the latter being the men's wives. Furness realized that the men all had ascending number combinations, and were married to women who had the descending opposite combination. Thus, the male combination 1 + 4 was married to the female 4 + 1; and the male boatman 3 + 4, in turn was married to the female spirit boat person 4 + 3, and so on. Furness could not figure out what like combinations referred to, that is, 4 + 4, 3 + 3, etc. He found out that these referred to special people, the chief, his wife and son.

An example of the metamnemonic use of sea charts comes from the Marshall Islands at the turn of the century, documented by Captain Winkler of the German Navy (Winkler 1901). He noted that in July, 1896 he was stationed for a while in the Marshall Islands, and while there made the acquaintance of a Dr. Irmer, the royal inspector of lands, who had in his possession two sea charts, of which he told Captain Winkler he could neither make head nor tail. So he laid them at Captain Winkler's conscience "since ethnologists are greatly interested in such matters". Winkler's candid disclosures of his subsequent methodology are amusing. It seems that his first informant was a Chief Nelu of the Marshall Islands. Chief Nelu was apparently quite free with his explanations, but they were too full of contradictions. The explanations did not make sense to Winkler. Finally, Winkler concluded that Nelu was not sufficiently trained, and "through incessant drinking of beer, which furnished his sole nourishment, had become too stupid to be able to render a clear explanation." (1901:489). A second informant was then tried: Chief Loja. This did not go well either. Loja considered Winkler to be stupid - "he

told me with seeming frankness that I was the dumbest churl he had ever seen" (1901:489). Only a glass of sack, which the old native loved, got him to be friendly again.

Nevertheless, with admirable Tuetonic thoroughness and persistence, Winkler won out. The charts are a system of little sticks tied together with mussel shells that are fastened onto them. The navigators that use them say that they instruct the youth regarding the direction of currents. The sticks themselves are used to refer to the direction of the principal Dunungs - a German technical term that does not mean currents as such but refers more specifically to the great swells of the water as they adapt themselves to the configurations of the islands. The sticks are proportionate, so that their size indicates the distances between the islands. The shape of the sticks, straight or curved, refers to different types of swells. Quite a bit of information is packed into this. Thus there is a swell called the "Backbone". The line of direction for this swell is indicated by a curve, with the explanation that in coming against an island, the Dunung or swell is held up, arrested, through the heaping up of the water at a certain distance from the island, whereby the swell beyond would be forced or curved inward. The mussel shells represent the islands themselves. Strings which are attached from one stick to another are of two kinds: the first refer to the mean direction of the trade winds, the second set refer to the waves of swells which are at right angles to the wind.

It seems clear from reading Winkler's account that these charts were individual mnemonic and instructional systems, rather than maps as we would understand them. "If one has not the maker of the chart himself as explainer, another, even an entirely competent navigator, can not under any circumstances read the deliverances of a chart which he himself has not made." Also "(they are used) by navigators as reminders of the various things which they have to attend to in sailing, as well as for rendering clear the noteworthy signs in the tuition of the uninitiated" (1901:495).

A final example of this kind will suffice. It comes from the Gilbert Islands, and is a mnemonic employed in using the stars for navigational purposes (Grimble 1924). The mnemonic is both used as a teaching and memorizing device through adoption of well-known myths. "Some popular hero of myth is said to have set out on a journey to a particular place; first he came across an old woman sitting at the door of her house (Pleiades), on whom he played some familiar trick, which caused her to run away westward (i.e. decline towards her sitting). Next, he met a man coming in a canoe from the east (this is to say, he then steered by the star Aldebaran in the constellation of Taurus, which is V-shaped, like the section of a canoe). With him he held converse until the old woman, who had run away from him, fell into the sea (the Pleiades set); she made such a dreadful noise that the hero of the tale ran away to eastward and took refuge with the two old lepers (Gemini). And so on, until the tale has unfolded the whole series of stars by which a canoe is guided to some particular land." (1926:134).

I should point out that the use of myths for carrying information of the kind found in the Gilbert Islands is very ancient. In their fascinating book, Hamlet's Mill ("Hamlet" refers back to the progenitors of Shakespeare's hero in Icelandic and Finnish sagas, and the "Mill" refers to the rotation of the stars around the central axis of the Heavens, and more extensively to the phenomenon of the procession of the equinoxes), De Santillana and von Dechend (1969) show how the archaic imagery of myths pertains to the perceived motion of stars and planets, and various interactions of these heavenly bodies.

All these are fairly simple metacognitive examples, which are mainly meta-memorial. Other examples have been noted in the psychological literature. Wagner (1978) for example, mentions that Koranic students appear to "show use of rhythmic markings to segment longer verses of the Koran", and further mentions a study by Landy among the Kpelle of Liberia which relates an observation about songs being recalled by singing and dancing. Rhythm is undoubtedly a widespread mnemonic.

Brown (1975) has suggested that the use of nursery rhymes in English school children serves a similar function. I am reminded of a story that the cross-cultural psychologist Gustav Jahoda once told about rural schoolchildren in Ghana learning the multiplication table through rote instruction. One little boy was overheard by the teacher to be muttering: "Da-di-da-di-dah; da-di-da-di-dah". On being questioned this little boy said that he knew the tune but had forgotten the words!

Further examples can be found in the ethnographic literature. McKnight (1961), for example, discusses the use of mnemonics in preliterate Palau, in the Pacific. He makes the general point that a major feast, or a couple of days of constant dancing, helps to keep in mind an important ceremonial event, such as the granting of a clan title or the cementing of a brotherhood relationship. More complex examples can be detected in various cultures. There is reason to think that the use of riddles in non-literate cultures is a kind of metacognitive device, certainly metalinguistic. Maranda (1974:57), a folklorist who has studied riddles in many cultures, suggests that "the person who learns riddles does not learn riddles as such; he learns how to make acceptable riddles by utilizing linguistic (especially semantic) classification, finding common points in presumably distinct classes, and exploring all the points of contact that can be found." As Maranda explicitly states: "Riddles at a certain level, therefore, are to be seen as a meta-language, since they are certainly a device for discussing essential features of the language in question." In the experimental psychology literature, with children of our own literate culture, Schultz (1974) has noted that riddles are structurally more similar to problems than to jokes. The problem is to understand how an apparently nonsensical answer is related to the original question, and rests on the detection of ambiguity. An example that Schultz gives: "Why did the cookie cry?", with its answer "Because its mother had been a wafer so long" provides the listener with a phonological ambiguity that serves as an arousal

mechanism for signal detection.

More subtle utilization, that I think should be considered under the general heading of metacognition - certainly metalinguistics - lies with certain verbal skills that are commonly used in various cultures. One example is that of signifying, used in Afro-American speech patterns. This is the recognition among its users of an implicit content that is masked by the surface content. Mitchell-Kernan (1972:166) gives an instance of a recorded interaction between two Black women in Oakland, California. The informant, Barbara, is talking to a friend, May, and tells her that if she is not doing anything, she (May) might drop by as Barbara is cooking "some chitlins". She then adds with a little dig that perhaps May is one of those negroes who don't eat chitlins? As Mitchell-Kernan amplifies, the interaction on the surface seems to be one of food habits, but implicitly the significance of the conversation turns on membership in traditional Black culture. Chitlins is a traditional food-stuff of Black culture. Not wanting to eat chitlins indicates an assimilation attitude. The girl, May, in this conversation, is being chided for adopting an alternative value system to the traditional Black values. Anybody "in the know" would understand what was going on if they listened to this conversation, but an outsider would not grasp it. This kind of talking is very widespread. As had been noted before, (Cole 1975; Price-Williams 1975) the Azande people of the Sudan have a special genre called Sanza in which this type of indirection is practised. Something ostensible, like the behavior of sparrows, is the surface material that is actually discussed. But the participants actually know that it is the speaker's wife that is being talked about. All sorts of things can be said about sparrows, that cannot be explicitly told to one's wife (Evans-Pritchard 1963). Elsewhere in the world are similar examples. French and Kernan (1981) have discussed the art of "Playing the Fool" among the creole community of Belize. This skill, which is practised in a variety of situations ranging from mere fun between peer-groups to

circumventing the law, is recognized as an art form. It involves feigned displays of foolishness, unawareness of incompetence for the purpose of tricking or fooling others. As playing the fool involves portraying oneself as ignorant or incompetent, its significance as a metacognitive strategy may not be apparent to scholars who are bent on portraying themselves as just the reverse, but we should give serious consideration to this kind of social behavior. The pervasiveness of the Trickster Figure motif is well appreciated in folklore, and indicates that cunning and artifice are serious candidates for any folk notion of intelligence. They are not the kind of factors that the founders or our own concept of intelligence have thought to be relevant, but they do involve careful planning and monitoring and a good knowledge of social rules.

All of these examples are products of a deliberate socialization and specialized training. Anthropologists have unfortunately paid little attention to the actual processes of the training, but it is clear that there must have been a selective process of people chosen for these skills, and there must have been long periods of rehearsal. Notwithstanding this, what principles can be drawn from such material? Wertsch et. al. (1980) have focussed on the adult-child dyad relationship, and argued along Vygotskian lines that inter-psychological processes have preceded the intra-psychological processes that are presumed to be implicit in the child's attempts at problem-solving. The ethnographic record would support this view, in part anyway. A biography of Maria the potter of the pueblo of San Ildefonso (Marriott 1948:13-27) shows for example how Maria's own observations as a child and remembered conversations with her mother and aunt, have provided the foundation for her later strategies of trading and pottery-making. The Vygotsky argument has been well supported by Wertsch in other publications (1979, in press) and by Cole and Newman (1981); I will not dwell on it here.

What seems to me to be striking in some of the accounts that I have discussed here is the emphasis on the principles of contiguity and similarity. This requires comment. We can note from these examples that both these principles are used for

metamorial purposes. Sizes of sticks refer to distances of canoe to island: the V shaped section of the canoe refers to the V shape of the constellation of Taurus: the notches of the message stick are contiguous to the verbal message as received and given; the different positions on the outrigger canoe refer to the names of the spirit boatmen. The classical author Quintilian (see Butler 1922, quoted also by Yates 1966:22) makes a definite plea for the principle of contiguity when he suggests a mnemonic scheme for would-be orators:

> "The first thought is placed, as it were in the forecourt; the second, let us say, in the living-room; the remainder are placed in due order all round the impluvium (a light-well in the center of the room) and entrusted not only to bedrooms and parlours but even to the care of statues and the like. This done, as soon as the memory of the facts require to be revived, all these places are visited in turn and the various deposits are demanded from their custodians, as the sight of each recalls the respective details...All are linked to the others like dancers hand in hand."

The uses of myth to carry information and to evoke the encoded material reminds us of the point that Levi-Strauss has made so much of. The thematic part of a myth is of course the story as it unfolds. In the Gilbert Island story described before, it is the hero setting out on a canoe journey, meeting a witch whom he tricks and who then falls into the sea, taking refuge with two old lepers, and so forth. This provides a context for any information that might be encoded therein: in this case it is the position of the stars for navigational purposes. Cross-sectional to the narrative as it unfolds, there can be found in other myths, various sets of codes. These codes may be couched in the description of everyday familiar things, such as pieces of clothing, geographical facts, types of foodstuffs, zoological and botanical observations, kinds of buildings. All these codes are referred to, by Levi-Strauss, as constituting the paradigmatic series, that is

opposed to the syntagmatic chain of events - the narrative. Leach (1970:43-52) has made clear that this distinction owes much to the previous work of structural linguists and scholars of semiotics, like de Saussure, Barthes and Jacobson. There is substantial agreement between all these people that the syntagmatic chain of events relies on the recognition of the principle of contiguity. In language use, the syntax of any particular language itself provides the connections (adjectives precede or follow nouns in the English and French languages respectively). The paradigmatic series, however, reli s on the recognition of the principle of similarity, which gets woven somewhat more complicatedly into metaphor and simile.

Now contiguity and similarity are old psychological colleagues. The various schools of Associationism and Conditioning have leaned heavily on one or the both of them. We should also note, in language use, that there is a certain relationship of syntactic (or syntagmatic) to paradigmatic use. Doris Entwisle (1966:7) has remarked that paradigmatic ability use is superimposed on syntactic use. "Our data suggest that the child first learns what-follows-what (the phase of syntactic responding) and then what-substitutes-for what (the phase of paradigmatic responding.)" She further makes the point, that has I think relevance for our theme, that "when a child gives a paradigmatic associate, he indicates that he knows something of the rules governing a particular form class, that he knows what-substitutes-for what".

This his has a direct relevance to memory studies is suggested by the Cole et. al. (1971) study of clustering ability among the Kpelle. The investigators were unable to achieve clustering among this people until they inserted the material to be remembered in the context of the story. We suggest that a successful mnemonic strategy is one that has an eye for matching task with strategy based on the principles of contiguity and similarity.

When we turn to the more metalinguistic material, a further point can be made. This refers to what might be called social intent. Wellman (1977) has stressed the importance of personal intentionality in the context of memory behavior,

showing that even children at the age of three years engage in intentional memory behavior. The literature that has been discussed about signifying and playing the fool, suggests these skills are laden with social intent. They are employed in the context of one-upmanship over authority; they are facilitated and maintained by group membership.

It is difficult to find in the experimental literature on metacognition any obvious reference to the principles noted here. Wellman has further noted (1977) that all metamemory research has proceeded by presenting tasks and situations to the child and then recording the child's responses through questioning. In other words, the task is imposed on them, rather than being self-selected. A strong arguement, in the context of investigating retarded people, that laboratory tasks may not tell us much about the level of competency of metamemory, has been made by Friedman, Krupski, Dawson and Rosenberg (1977). These investigators interviewed young adult retarded students enrolled in a public school for the trainable mentally retarded (TMR). Their results suggested that even severely retarded individuals are able to generate strategies for storing and retrieving information, within the context of their daily lives.

1. Metacognition in Socio-Cultural Situations of Mentally Retarded Individuals

These findings of Friedman et al. as well as earlier interviews conducted by Kreutzer, Leonard and Flavell, (1975) have encouraged the following analysis from field notes reported on the actual experiences of mental retardate persons. The material was gathered by field workers, trained in ethnographic procedures, in the context of investigations sponsored by the Socio-Behavioral Group of the Mental Retardation Center, of the University of California, Los Angeles (Edgerton 1976/8, Edgerton 1980/85). The field workers were not specifically oriented to reporting on metacognitive behavior, and thus their observations are serendipitous in this respect. The observations were carried out through the ethnographic technique of participant observation, by the field workers interacting with border-

line mental retardate persons living in the community. What metacognitive material there is thus has to be seen in this ethnographic perspective.

It is convenient to group the material under specific headings which characterize the type of event or interaction. It has to be understood that this is yet a foraging attempt and is not yet in a final systematic form.

1) Sensitivity to being considered retarded. It will be remembered that Flavell and Wellman (1977) and Wellman elsewhere (1978) have categorized sensitivity as a major heading of metamemory, that involves a child's awareness of the need to remember certain things and an assessment that some situations and not others call for deliberate strategic efforts to store and retrieve items. In the case of these mental retardate individuals we can extend the meaning of sensitivity to refer to the awareness that they are different from normal, which often motivates them to perform actions to adjust to this situation. We might say that these actions can be thought of as "passing for normal". They indicate that these mental retardate individuals use so-called normal people as reference group to measure their own deficiency. Edgerton (1967) had ealier made the observation that his sample of ex-institutionalized mental retardate people went to long lengths to cover up the fact that they did not know how to tell the time, how to assess money change. I was earlier (Price-Williams 1975:61) struck by the fact that these particular mental retardate individuals seemed to display sufficient intelligence to avoid being thought stupid. Now in going over this material concerning a different group, this impression is reinforced. Let me give a few examples. For instance, an interviewer had an exchange with Leonard about the latter ordering an "orange whip" at a drug store. This stuck in Leonard's memory, and afterwards he asked the interviewer whether he had said the words "orange whip" in a low voice. It transpired that he was worried that his tone of voice indicated that he was not acting normally. Another retardate, Keith, is known as a "Fone Freak". He spends most of his time on the phone, as in this way nobody can tell - to his mind -that

hs is not normal. When he started to date a girl, who ideally turned out to be a 'phone operator, he realized that you can only go so far on the telephone, so he was forced to take the risk of meeting her. Another man, Rick, introspected on his being retarded. It made him feel bad, because he could not do a lot of things. He couldn't drive a car, for example. Nor could he express himself in the way he wanted to. But he felt that he could pay the rent, make telephone calls and "things like that". He complained that he could not make the income tax out, "because he was retarded". Another remark refers to difficulties of memory: "Memories are like tapes. You don't play them for a while and you hear things that weren't there before." A point which several field workers noted is relevant, I think. They were struck by the fact that so many of these retardate persons in the community repeated things that social workers told them.

2) Compensation through using others. Friedman et al. (1977) reported of their retardate sample that when they were asked the following problem: "Suppose your friend told you that he wanted one of your class pictures. You told him that you would bring the picture to school the next day so that he could have the picture. What would you do to be sure to remember to bring the picture?": Several replied that they would ask someone to remind them. This simple expedient has been found in this study also. For example, when a field worker asked Fred whether he would remember a doctor's appointment, which the field worker had arranged, Fred gave the business card of the doctor with the appointment time written on it, to the desk clerk of his building, with the instructions to give him a wake-up call on that day. Further investigation should determine the frequency of this strategy as it actually occurs in the course of daily living. In their experimental and interview study of mildly and moderately retarded children, Eyde and Altman (1978) reported that only between twenty-five and fifty percent of their sample indicated that they remembered objects and events in this manner. However, in their study

on normal children's knowledge about memory, Kreutzer, Leonard and Flavell (1975) remarked on the external resources that a child used for preparation and retrieval purposes, which as they noted were resources which had earlier been dubbed "cultural". Such external resources included other human beings as auxiliary storers and retrievers of data. We have found this to be very true of the retarded people. Two examples will suffice. Tom does not understand the whole concept and procedures of banking. His sister, does, however. So she does this task for him on a regular basis. Tom also has the notion that by doing this through his sister he can hide money from the SSI people. Eileen has a twin sister who has a normal daughter. Both of the mentally retarded sisters sit in at sessions with the normal daughter who explains to them her homework. Turner (personal communication) has found households of retarded people who lean on each other's special skills. One knows how to market; the other deals with checks; a third only knows how to cook. A kind of symbiotic group intelligence is set up, by means of which all of them can cope, whereas individually they could not.

3) Metacognition in social situations. What really stands out, however, in this material, is the amount of planning and monitoring that goes on with respect to social situations. Leo, for example, is beset with problems of loneliness. He has four methods of combatting this: see a friend, go out for a walk and get a cup of coffee, call a friend on the 'phone, and take a nap. Anne has a complicated strategy for a future possible independence from her irresponsible husband. She learns how to operate the money, gets Visa and Mastercard in her name. Money problems are a constant source for metacognitive activities. Blanche goes shopping at the supermarket and has a deliberate strategy. She compares prices and then goes for the product that advertises more weight for the same amount of money. Dick has a hierarchical strategy for spending his SSI check. He pays the hospital bill, then his cable television, then the 'phone bill, and when all that is done, buys some food. Preparation for dealing with the bill-collector is another item,

Take Dick again: "I will tell them to contact my lawyer directly". Or maybe, "I will put a note on my door telling the bill collector what to do". Billy has a whole scenario for getting a job as a record executive. "...you just ask people who work somewhere around the sides of the business or in the field. Check it out. If there's an opening, go down and talk to the person in charge. Go for an interview. Tell 'em what you have to offer. Tell 'em about yourself. Tell 'em that you're very eager to work and you wants try it."

While many of these strategies may not be effective, they do indicate that something approaching metacognition is going on. They often have to be caught in vivo so to speak. For example, a field worker caught a mentally retarded woman worrying over an envelope. She was sending off a letter to Art Linkletter, but inadvertently had put her own address in the window of the envelope. She sensed something was wrong, and eventually got it right.

Conclusions. That planning, adopting strategies, monitoring and remedying ongoing behavior take place is not in doubt. The issue is what status should be ascribed to these activities? My own opinion is that it would be a mistake to think of metacognition as another level of cognition. To pursue that direction takes us to an infinite regress of cognitions, as we might be persuaded to pin yet another meta - onto the sequence. I have proposed that we consider the problem in terms of a distal-proximal gradient, with the upper reaches of the distal end stretching into the wider social context. The way in which these upper reaches are studied is indeed different from the way in which the proximal end is studied. In this methodological sense there are indeed different types of analysis. But the types are different because it is a matter of ordering different classes of phenomena. As Gregory Bateson (1972) recognized in his discussion of deutero-learning, the philosophical scheme is based on the hierarchical theory of logical types, which dictates that no class can be a member of itself. To identify meta-cognition as

a class of cognition is to commit a logical fallacy of this kind. But if metacognition is not another level of cognition, this is not to say that there is not a cognitive element involved. The issue can be resolved by stating that there are two elements involved in this concept, an external one and an internal one. The external one lies in the domain of social interaction and social institutions, in the entire socio-technical system. This is to say that the resources and determining aspects are exosomatic, outside of the individual. Flavell has very recently focused on this aspect in his interesting formulation of social-cognitive enterprises (1981). What is internal to the individual is the directionality or vectoring component of the cognitive process itself. When the internal engages the external, we can use the term "metacognition".

References

Bateson, G. The logical categories of learning and communication. In G. Bateson, Steps to an ecology of mind. New York: Ballentine Books, Inc., 1972, 279-308.

Bowen, E. Smith. Return to laughter. New York: Doubleday and Co., Anchor Books, 1964.

Brown, A. L. The development of memory: knowing, knowing about knowing, and knowing how to know. In H. W. Reese (Ed.), Advances in child development and behavior. 10. New York: Academic Press, 1975.

Brown, A. L. Knowing when, where, and how to remember: a problem of metacognition. In R. Glaser (Ed.), Advances in instructional psychology. Hillsdale, New Jersey: Erlbaum, 1978.

Brunswik, E. Perception and the representative design of psychological experiments. Berkeley: University of California Press, 1956.

Butler, H. E. (Ed. and Transl.), The institutio oratoria of Quintilian. Vol. IV, Book XI, ii, 19-22. London: William Heinemann, 1922.

Butterfield, E. C. Observing cognitive development. In G. P. Sackett (Ed.), Observing behavior. Vol. I, theory and application in mental retardation. Baltimore, Md.: University Park Press, 1978.

Cicourel, A. V. Cognitive sociology: Language and meaning in social interaction. New York: The Free Press, 1974.

Cole, M. An ethnographic psychology of cognition. In R. W. Brislin, S. Bochner and W. J. Lonner (Eds.), Cross-cultural perspectives on learning. Chap. 6. New York: John Wiley and Sons, 1975.

Cole, M., Gay, J., Glick, J. A. and Sharp, D. W. The cultural context of learning and thinking. New York: Basic Books, 1971.

Cole, M. and Newman, D. The development of planning in elementary school children. Laboratory of Comparative Human Cognition, Technical Proposal (Ms.), 1981.

De Santillana, G. and von Dechend, H. Hamlet's mill: An essay on myth and the frame of time. London: MacMillan, 1969.

Edgerton, R. The cloak of competence. Berkeley: University of California Press, 1967.

Edgerton, R. The community context of normalization study. NICHD Grant HD 09474-02 (Ms.), 1976/8.

Edgerton, R. The community adaptation of mildly retarded persons. NICHD Grant HD 11944 (Ms.), 1980/5.

English, H. B. and English, A. C. A comprehensive dictionary of psychological and psychoanalytical terms: A guide to usage. New York: Longmans, Green and Co., 1958.

Entwisle, D. R. Word associations of young children. Baltimore, Md.: The Johns Hopkins Press, 1966.

Evans-Pritchard, E. E. Sanza: a characteristic feature of Zande language and thought. Chap. 9 of Essays on social anthropology. New York: Free Press of Glencoe, 1963.

Eyde, D. R. and Altman, R. An exploration of metamemory processes in mildly and moderately retarded children. Department of Special Education. Columbia: University of Missouri, Final Report, Project No. 443AH60046., 1976.

Flavell, J. H. Cognitive development. Englewood Cliffs, New Jersey: Prentice-Hall, 1977.

Flavell, J. H. Monitoring social-cognitive enterprises: Something else that may develop in the area of social cognition. In J. H. Flavell & L. Ross (Eds.), Social cognitive development: Formulations and possible factors. New York:

Flavell, J. H. and Wellman, H. M. Metamemory. In R. Kail and J. Hagen (Eds.), Perspectives on the development of memory and cognition. Hillsdale, New Jersey: Erlbaum, 1977.

French, R. and Kernan, K. T. Art and artifice in Belizian Creole. American Ethnologist, 1981, 8:2, 238-258.

Friedman, M., Krupski, A., Dawson, E. T. and Rosenberg, P. Metamemory and mental retardation: Implications for research and practice. In P. Milter (Ed.), Research to practice in mental retardation. Vol. II Education and Training. Baltimore, Md.: University Park Press, 1977.

Grimble, A. Canoes in the Gilbert Islands. Journal of the Royal Anthropological Institute, 1924, 54, 101-139.

Kreutzer, M.A., Leonard, C. and Flavell, J. H. An interview study of children's knowledge about memory. Monogr. Soc. Res. Child Development, 4/1, 1975.

Leach, E. Claude Levi-Strauss. New York: The Viking Press, 1970.

Lessa, W. A. Divining by knots in the Carolinas. The Journal of the Polynesian Society, 1959, 68, 188-204.

Maranda, E. K. Theory and practice of riddle analysis. Journal American Folklore, 1974, 84, 51-61.

Marriott, J. V. Maria: The potter of San Ildefonso. Norman, Oklahoma: University of Oklahoma Press, 1948.

McKnight, R. K. Mnemonics in pre-literate Palau. Anthropological Working Papers #9. Guam, M.I., A series issued from the Office of the Staff Anthropologist, Trust Territory of the Pacific Islands, 1961.

Meacham, J. A. The development of memory abilities in the individual and society. Human Development, 1972, 15, 205-228.

Mitchell-Kernan, C. Signifying and marking: two Afro-American speech acts. In J. J. Gumprez and D. Hymes (Eds.), Directions in sociolinguistics: The ethnography of communication. New York: Holt, Rinehart and Winston, 1972.

Neisser, U. Cognitive psychology. New York: Appleton-Century-Crofts, 1966.

Price-Williams, D. R. Explorations in cross-cultural psychology. San Francisco: Chandler and Sharp, 1975.

Price-Williams, D. R. Anthropological approaches to cognition and their relevance to psychology. In H. C. Triandis and W. Lonner (Eds.), Handbook of cross-cultural psychology, Vol. 3: Basic processes. Boston: Allyn and Bacon, Inc., 1980.

Schultz, T. R. Development of the appreciation of riddles. Child Development, 1974, 45, 100-105.

Turner, J. Personal communication, February 9, 1981.

Tyler, S. A. (Ed.), Cognitive anthropology. New York: Holt, Rinehart and Winston, 1969.

Vygotsky, L. S. Mind in society: The development of higher psychological processes. Cambridge: Harvard University Press, 1978.

Wagner, D. A. Memories of Morocco: The influence of age, schooling and environment on memory. Cognitive Psychology, 1978, 10, 1-28.

Waipuldanya, with Lockwood, D. I, the aboriginal. New York and Cleveland: Meridian Books, The World Publishing Co., 1978.

Wellman, H. M. The early development of intentional memory behavior. Human Development, 1977, 20, 86-101.

Wellman, H. M. Knowledge of the interaction of memory variables: a developmental study of metamemory. Developmental Psychology, 1978, 14, 24-29.

Wertsch, J. V. From social interaction to higher psychological processes: a clarification and application of Vygotsky's theory. Human Development, 1979, 22, 1-22.

Wertsch, J. V. A state of the art review of social research in cognitive psychology. Storia e critica della psicologia (Rome), in press (Ms.).

Wertsch, J. V., McNamee, G. D., McLane, J. B. and Budwig, N. A. The adult-child dyad as a problem-solving system. Child Development, 1980, 51, 1215-1221.

Winkler, Captain. On sea charts formerly used in the Marshall Islands, with notices on the navigation of these islanders in general. Washington Government Printing Office: Smithsonian Institute. Annual Report for 1898/99, 1901, 487-508.

Yates, F. A. The art of memory. Chicago: University of Chicago Press, 1966.